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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

WOOD, WILLIAM H

ART UNIT

PAPER NUMBER

2193

DATE MAILED: 02/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/823,207	TIRUMALAI ET AL.	
	Examiner	Art Unit	
	William H. Wood	2193	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-9,11-13 and 15-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-9,11-13 and 15-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims 1, 3-9, 11-13 and 15-20 are pending and have been examined.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1, 3-9, 11-13 and 15-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The independent claims require, "hypothetical machine model is *capable* of operating ..." (emphasis added). This establishes an unclear relationship between the model and the target machines (is the model operating or not).

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 3-6, 8-9, 11-13 and 15-20 are rejected under 35 U.S.C. 102(b) as being anticipated by **Aho et al.**, "Compilers: Principles, Techniques, and Tools".

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Claim 1

Aho disclosed a method of simultaneously optimizing at least two target machines (page 14-15, section "Code Optimization"; further page 20, section "Front and Back Ends", *simultaneously is a matter of perspective, further the front end does optimization for both targets as well*), comprising:

- ♦ abstracting a rule of instruction scheduling for each of said at least two target machines (page 463);
- ♦ generating a hypothetical machine model of a hypothetical machine based on said rule of instruction scheduling for each of said at least two target machines (page 12, first paragraph under section "Intermediate Code Generation"); and
- ♦ targeting said hypothetical machine, wherein said hypothetical machine model is capable of operating on each of said at least two target machines (page 463, item 2; *the abstract machine being a generic version of the targets is therefore capable over operating on the targets*).

Further, **Aho** disclosed the method of claim 1 wherein a rule of instruction scheduling for said hypothetical machine is a restrictive set of said rule of instruction scheduling for each of said at least two target machines (page 20, section "Front and Back Ends", second paragraph; page 463, the necessary set of rules to target the machines).

Claim 3

Aho disclosed the method of claim 1 further including the steps of:
detecting a conflict between said rule of instruction scheduling for each of said at least two target machines; and resolving said conflict (*page 20, second paragraph; conflicts being when the compiler must choose to follow actual rules for the actual target machine after the optimizing intermediate code step*)

Claim 4

Aho disclosed the method of claim 3 wherein said step of resolving said conflict includes a step of selecting a less damaging option for said detected conflict (*page 20, second paragraph; "less damaging" is choosing the rules for the actual machine being targeted*).

Claim 5

Aho disclosed the method of claim 3 wherein said detected conflict corresponds to an inherent conflict between said rule of instruction scheduling for each of said at least two target machines (*page 20, second paragraph; "less damaging" is choosing the rules for the actual machine being targeted verses a machine not currently being targeted*).

Claim 6

Aho disclosed the method of claim 1 further including the steps of:

modeling each of said at least two target machines (*page 12, "abstract machine"; page 20, target machine info in backend; and page 463, targeting several machines; some model therefore necessary of the several machines in order to target them*); and retrieving scheduling information corresponding to each of said at least two target machines (*page 463, item number 1.; scheduling information is required for targeting machines*).

Claims 8-20

The limitations of claims 8-20 correspond to the limitations of claims 1-6 and as such are rejected in the same manner.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Aho** et al., "Compilers: Principles, Techniques, and Tools" in view of "UltraSPARC-III: Designing Third-Generation 64-Bit Performance" (herein referred to as **III**) and SunMicrosystems press release of May 1998 (herein referred to as **II**), both in support of prior taken Official Notice as prescribed in MPEP 2144.03.

Claim 7

Aho did not explicitly state the method of claim 1 wherein said at least two target machines include an UltraSPARC-II configured to operate at a speed of 360 MHz and an UltraSPARC-III configured to operate at a speed of 600 MHz. Official Notice is taken that it was known at the time of invention to make use of UltraSPARC-II and III processors configured at varying MHz ranges within their capabilities (please note, II teaching a UltraSPARC II processor configured to 360 MHz, and III teaching a UltraSPARC III processor configured to 600 MHz). It would have been obvious to one of ordinary skill in the art at the time of invention to implement the compiler system of **Aho** with UltraSPARC-II and III processors as known in the prior art. This implementation would have been obvious because one of ordinary skill in the art would be motivated to provide a retargeting compiler (cuts down on development time and cost; also **Aho** page 463) for known machine architectures (varying architectures require compiling and optimizing of code).

Response to Arguments

6. Applicants' arguments filed 28 November 2005 have been fully considered but they are not persuasive. Applicants argue **Aho** fails to disclose a hypothetical machine model that incorporates the characteristics of at least two target machines so that the model can operate on either of the two target machines (see Applicants' response page 9, first paragraph). This is untrue. Clearly, **Aho** describes an abstract machine (page 12, Intermediate Code Generation). **Aho** then describes how this abstract machine is

“largely independent of the target machine” (page 20, Front and Back Ends) or in other words capable of describing or operating on several target machines, not just one. The claims now call for a model, which is an abstraction. In some respects, the limitations of the claims are reading even more thoroughly upon the cited prior art. The claims classically represent a standard compiler configuration.

Applicants' claim language is very broad, for example, “hypothetical machine model is *capable* of operating ...” (emphasis added). With only such language it is very difficult to overcome the cited prior art (and a host of other possible art regarding compilers). Furthermore, Applicants assert conclusions, which are not supported by the language, for example, “the desired outcome of embodiments of the present Application is to obtain *one given binary* that is optimized to run on *each* target machine (see Applicants' response page 10, first paragraph). This is a clear disconnect between what Applicants mean to claim and what Applicants have claimed. Therefore, the broadest reasonable interpretation of the claim language reads upon **Aho** as previously and currently indicated.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

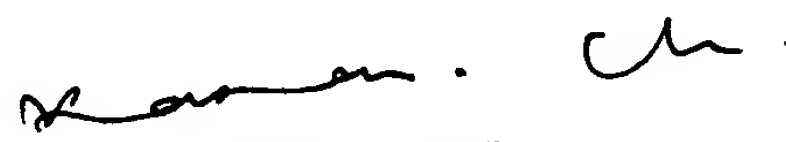
Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William H. Wood whose telephone number is (571)-272-3736. The examiner can normally be reached 9:00am - 5:30pm Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kakali Chaki can be reached on (571)-272-3719. The fax phone numbers for the organization where this application or proceeding is assigned are (571)273-8300 for regular communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.


William H. Wood
February 14, 2006


KAKALI CHAKI
SENIOR PATENT EXAMINER
TECHNOLOGY CENTER 2100